

## ABSTRACT

A high capacity broadband base station employs a wideband radio and phased array processing subsystem. The phased array antenna subsystem contains multiple sets or pairs of alternating receive only and transmit/receive elements distributed in a two dimensional spatial array. Each digital wideband radio performs both receive and transmit channel signal processing. In the receive direction, the digital representation of the entire spectrum for each antenna element is divided into channels for the particular waveform of interest. For a 5 MHz PCS GSM, the digital wideband radio separates twenty-four carriers into twenty-four (200 KHz wide) data streams, each of which is representative of a respective channel, and couples each channel to a digital signal processor. In the transmit direction, the radio combines the digital representations of the twenty-four individual channels supplied by the DSP into a single wideband channel for transmission.